Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method of processing n-dimensional digital signals, n being an integer at least equal to 1, comprising the steps of:

(a) receiving an n-dimensional digital input signal;

(b) computing an n-dimensional warped signal from said n-dimensional digital input signal, the n-dimensional warped signal including n-dimensional warped coefficients and n-dimensional signal warping grids; and

(c) computing warped wavelet packet coefficients and wavelet packet warping grids by applying an n-dimensional warped wavelet packet transform to said warped signal, with a binary tree where each node performs a one-dimensional warped subband processing along a respective dimension d, with $1 \leq d \leq n$;

wherein said signal warping grids are computed from a warping geometry defined by region parameters specifying a partition of a signal support into a plurality of regions and deformation parameters specifying geometrical deformation functions respectively associated with said regions, whereby the geometrical deformation function associated with one of the regions provides positions of sampling points within said one of the regions;

wherein $n=3$, said n-dimensional digital input signal represents a video image sequence, and wherein the step of computing the n-dimensional warped signal comprises estimating motion vectors within said video image sequence, determining at least one of said n-dimensional geometrical deformation functions by applying a time displacement to a 2-dimensional geometrical deformation using said estimated motion vectors, and computing said n-dimensional warped signal from said warping geometry and said n-dimensional digital input signal.

2-11. (Canceled)

12. (Currently Amended) A signal processing method according to claim [[8]] 1, further comprising the step of applying a bandeletisation to said warped wavelet packet coefficients and wavelet packet warping grids, wherein said bandeletisation comprises computing bandelet coefficients by applying invertible one-dimensional decorrelation operators to said warped wavelet packet coefficients along selected directions of said wavelet packet warping grids.

13-16. (Canceled)

17. (Currently Amended) A signal processing method according to claim 12, further comprising the steps of:

(a) quantizing said bandelet coefficients to produce quantized bandelet coefficients; and

(b) encoding said quantized bandelet coefficients and said region and deformation parameters into a multiplexed data stream suitable for storage in a storage medium or for transmission over a transmission medium, said multiplexed data stream being a compressed representation of [[an]] said n-dimensional digital input signal from which the n-dimensional warped signal is computed.

18-25. (Canceled)

26. (Currently Amended) A signal processing method according to claim 17, of processing n-dimensional digital signals, n being an integer at least equal to 1, comprising the steps of:

receiving an n-dimensional digital input signal;

computing an n-dimensional warped signal from said n-dimensional digital input signal, the n-dimensional warped signal including n-dimensional warped coefficients and n-dimensional signal warping grids;

computing warped wavelet packet coefficients and wavelet packet warping grids by applying an n-dimensional warped wavelet packet transform to said warped signal, with a binary tree where each node performs a one-dimensional warped subband processing along a respective dimension d, with $1 \leq d \leq n$;

applying a bandeletisation to said warped wavelet packet coefficients and wavelet packet warping grids, wherein said bandeletisation comprises computing bandelet coefficients by applying invertible one-dimensional decorrelation operators to said warped wavelet packet coefficients along selected directions of said wavelet packet warping grids;

quantizing said bandelet coefficients to produce quantized bandelet coefficients; and

encoding said quantized bandelet coefficients and said region and deformation parameters into a multiplexed data stream suitable for storage in a storage medium or for transmission over a transmission medium, said multiplexed data stream being a compressed representation of said n-dimensional digital input signal from which the n-dimensional warped signal is computed;

wherein said signal warping grids are computed from a warping geometry defined by region parameters specifying a partition of a signal support into a plurality of regions and deformation parameters specifying geometrical deformation functions respectively associated with said regions, whereby the geometrical deformation function associated with one of the regions provides positions of sampling points within said one of the regions;

wherein $n=3$ and said n-dimensional digital input signal represents a video image sequence, and wherein the step of computing the parameters defining the warping geometry comprises[[:

(a)]] estimating motion vectors within said video image sequence[[;]]$_{\ast}$ and [[(b)]] determining at least one of said n-dimensional geometrical deformation functions by applying a time displacement to a 2-dimensional geometrical deformation using said estimated motion vectors.

27-79. (Canceled)

80. (Previously Presented) A signal processing method according to claim 1, wherein the step of computing an n-dimensional warped signal includes computing an n-dimensional warped signal from said n-dimensional digital input signal, the n-dimensional warped signal including n-dimensional warped coefficients and n-dimensional signal warping grids from which the n-dimensional digital input signal can be reconstructed without any residual.